

ABSTRACT

The present invention provides methods for producing transgenic plants based on an optimized transfer of DNA from *Agrobacterium* to plant cells, and/or on an optimized integration of the transferred DNAs into plant cell
5 genomes. It also provides *Agrobacterium*-transformation vectors that can be used to limit or eliminate the transfer of undesirable DNA. The present invention can be applied to essentially any species of plants, including many recalcitrant plant species. The present invention also provides new
10 cyanamide resistance marker genes and proteins for enhancing plant cell transformation.